

PERFORMANCE REPORT

State: Louisiana

Project Number: W-55-19

Project Title: Upland Survey

Period Covered: July 1, 2004 - June 30, 2005

Study Number and Title: V-4, Bobwhite Fall Whistling Surveys

Study Objective: To determine relative size and distribution of bobwhite populations in Louisiana.

Study Abstract

Bobwhite fall whistling counts were conducted statewide along 38 routes (10 additional routes were assumed zeros). Among the 5 habitat types surveyed, the highest count was obtained from the southeast loblolly pine type (0.08 whistles/stop), followed by mixed shortleaf/loblolly pine - hardwood (0.07 whistles/stop), historical longleaf pine (0.04 whistles/stop), the rice belt (0.03 whistles/stop), and the Mississippi/Atchafalaya agricultural belt (0.00 whistles/stop) (Tables 1 and 2). Fort Polk, Camp Beauregard, Jackson-Bienville, Peason Ridge, Vernon District No. 1 and Vernon District No. 2 routes yielded 0.15, 0, 0.20, 0.30, 0.05, and 0.05 whistles/stop, respectively (Table 3).

Seven (7) summer bobwhite counts were conducted on the Sandy Hollow Wildlife Management Area. Counts ranged from 6-15 (Table 4). The mean count was 10.1 which is 40% lower than the 2004 mean. The peak count (15) was lower than the long-term (1986-2004) average peak count of 109, and the lowest on record (Figure 1).

Two (2) routes were run 5 times each on Camp Beauregard WMA. Camp Beauregard No. 1 counts ranged from 0 – 4 with a mean of 3.2. Camp Beauregard No. 2 counts also ranged from 0 – 4 and had a mean of 1.0.

- A. Activity: Fall whistling counts were conducted along 38 pre-selected routes to determine relative size and distribution of fall bobwhite populations. The 5 habitat types surveyed were historic longleaf pine, mixed shortleaf and loblolly pine-hardwood, loblolly pine (Florida Parishes), the rice belt and the Mississippi/Atchafalaya agricultural belt. Bobwhite summer whistling counts were also conducted on the Sandy Hollow Wildlife Management Area and Camp Beauregard Wildlife Management Area.
- B. Target Date for Achievement: June 30, 2005
- C. Date Accomplished: June 30, 2005
- D. Significant Deviations: None
- E. Remarks: A summary report and long-term trends in fall whistling counts are summarized in Appendix 1.
- F. Recommendations: Continue survey.

Prepared by: _____
Frederick G. Kimmel, Upland Game Study Leader

Table 1. Whistles per stop recorded during the 2004 statewide whistling counts for bobwhites.

| | | <u>Whistles Per Stop</u> | |
|-----------------------------|--------------|--------------------------|-------------------|
| Date | Route Number | 2003 | 2004 |
| Loblolly (Florida Parishes) | | | |
| 7 November 2004 | 18 | 0.05 | 0.10 |
| 18 October 2004 | 21 | 0.37 ^a | 0.06 ^b |
| 5 November 2004 | 29 | 0.05 ^a | 0.05 ^a |
| 20 October 2004 | 35 | 0.00 ^a | 0.07 ^a |
| 18 October 2004 | 43 | 0.15 | 0.06 ^b |
| 25 October 2004 | 46 | 0.10 | 0.11 ^a |
| | All Routes | 0.12 | 0.08 |
| Historic Longleaf | | | |
| | 03 | 0.00 ^h | 0.00 ^h |
| 19 October 2004 | 05 | 0.05 | 0.00 ^a |
| 21 October 2004 | 10 | 0.10 | 0.00 ^a |
| 24 October 2004 | 11 | 0.35 | 0.21 ^a |
| | 17 | 0.00 ^b | 0.00 ^h |
| 22 October 2004 | 23 | 0.00 | 0.00 |
| 26 October 2004 | 34 | 0.06 ^b | 0.00 ^b |
| 26 October 2004 | 37 | 0.00 ^a | 0.00 ^a |
| | 39 | 0.00 | 0.00 ^h |
| 20 October 2004 | 40 | 0.15 | 0.00 ^d |
| | 44 | 0.00 ^h | 0.00 ^h |
| | 50 | 0.00 ^h | 0.00 ^h |
| 20 October 2004 | 52 | 0.43 | 0.35 |
| 22 October 2004 | 56 | 0.00 | 0.00 ^d |
| | All Routes | 0.07 | 0.04 |
| Rice | | | |

| Date | Route Number | <u>Whistles Per Stop</u> | |
|---|--------------|--------------------------|-------------------|
| | | 2003 | 2004 |
| | 02 | 0.00 ^h | 0.00 ^h |
| 20 October 2004 | 13 | 0.00 ^a | 0.11 ^b |
| 13 October 2004 | 32 | 0.00 | 0.00 ^f |
| 18 October 2004 | 41 | 0.00 ^d | 0.00 ^b |
| | 49 | 0.00 ^h | 0.00 ^h |
| 21 October 2004 | 67 | 0.06 ^b | 0.06 ^b |
| | All Routes | 0.01 | 0.03 |
| Shortleaf/Loblolly/Hardwood | | | |
| 05 November 2004 | 09 | 0.00 | 0.11 ^b |
| 19 October 2004 | 15 | 0.10 | 0.00 |
| 20 October 2004 | 22 | 0.15 | 0.20 |
| 28 October 2004 | 25 | 0.00 | 0.00 ^d |
| 6 November 2004 | 26 | 0.15 | 0.06 ^c |
| 21 October 2004 | 28 | 0.05 ^a | 0.17 ^a |
| 4 November 2004 | 30 | 0.00 | 0.00 |
| 28 October 2004 | 31 | 0.00 | 0.05 |
| 21 October 2004 | 36 | 0.00 | 0.05 |
| 19 October 2004 | 47 | 0.10 | 0.05 |
| 5 November 2004 | 48 | 0.15 | 0.00 ^a |
| 20 October 2004 | 53 | 0.15 | 0.05 |
| 22 October 2004 | 55 | 0.05 | 0.10 |
| 21 October 2004 | 59 | 0.05 | 0.10 |
| 27 October 2004 | 62 | 0.05 ^a | 0.00 |
| 22 October 2004 | 69 | 0.32 ^a | 0.11 ^a |
| | All Routes | 0.07 | 0.07 |
| Mississippi River Floodplain Agriculture | | | |
| | | 0.00 ^h | 0.00 ^h |

| Date | Route Number | <u>Whistles Per Stop</u> | |
|-----------------|--------------|--------------------------|-------------------|
| | | 2003 | 2004 |
| | 06 | | |
| | 12 | 0.00 ^a | 0.00 ^h |
| 28 October 2004 | 14 | 0.05 | 0.00 ^b |
| | 16 | 0.00 ^h | 0.00 ^h |
| 3 November 2004 | 20 | 0.35 | 0.00 ^a |
| 26 October 2004 | 33 | 0.10 | 0.00 ^a |
| | All Routes | 0.08 | 0.00 |

^a Only 19 stops

^b Only 18 stops

^c Only 17 stops

^d Only 16 stops

^e Only 15 stops

^f Only 14 stops

^g Only 12 stops

^h Assumed zero

Table 2. Paired t statistics for the fall 2004 quail whistling counts by region (base year 2003).

| Region | N | Mean Difference | Standard Error | t | Prob. |
|-------------|----|--------------------|-------------------|-------|-------|
| Loblolly | 6 | -0.048 | 0.058 | -0.82 | 0.45 |
| Longleaf | 14 | -0.041 | 0.015 | -2.76 | 0.02 |
| Rice | 6 | 0.019 | 0.019 | 1.00 | 0.36 |
| Shortleaf | 16 | -0.017 | 0.024 | -0.74 | 0.47 |
| Agriculture | 6 | -0.083 | 0.056 | 1.49 | 0.20 |
| All Routes | 48 | -0.032 | 0.014 | -2.35 | 0.02 |

Table 3. Whistles per stop recorded during the 2004 special fall whistling counts for bobwhites.

| Date | Route | <u>Whistles Per Stop</u> | |
|-----------------|--------------------|--------------------------|-------------------|
| | | 2003 | 2004 |
| 22 October 2004 | Ft. Polk | 0.10 | 0.15 |
| 26 October 2004 | Camp Beauregard | 0.00 | 0.00 ^a |
| 20 October 2004 | Jackson-Bienville | 0.40 | 0.20 |
| 21 October 2004 | Peason Ridge | 0.40 | 0.30 |
| 22 October 2004 | Vernon District #1 | 0.05 | 0.05 ^a |
| 25 October 2004 | Vernon District #2 | 0.00 ^a | 0.05 |

^a 19 Stops

^b 18 stops

^c 16 stops

Table 4. Whistles recorded on the 2004 Sandy Hollow and Camp Beauregard Wildlife Management

Areas bobwhite summer whistling counts.

| Date | Route | Number of Calls |
|--------------|-----------------------|-----------------|
| 6 May 2005 | Sandy Hollow | 6 |
| 13 May 2005 | Sandy Hollow | 8 |
| 24 May 2005 | Sandy Hollow | 9 |
| 3 June 2005 | Sandy Hollow | 9 |
| 10 June 2005 | Sandy Hollow | 15 |
| 17 June 2005 | Sandy Hollow | 7 |
| 24 June 2005 | Sandy Hollow | 14 |
| 1 July 2005 | Sandy Hollow | 12 |
| 18 May 2005 | Camp Beauregard No. 1 | 4 |
| 24 May 2005 | Camp Beauregard No. 1 | 4 |
| 31 May 2005 | Camp Beauregard No. 1 | 0 |
| 8 June 2005 | Camp Beauregard No. 1 | 4 |
| 21 June 2005 | Camp Beauregard No. 1 | 4 |
| 19 May 2005 | Camp Beauregard No. 2 | 0 |
| 25 May 2005 | Camp Beauregard No. 2 | 0 |
| 2 June 2005 | Camp Beauregard No. 2 | 0 |
| 9 June 2005 | Camp Beauregard No. 2 | 4 |
| 23 June 2005 | Camp Beauregard No. 2 | 1 |

Peak Summer Bobwhite Count Sandy Hollow WMA

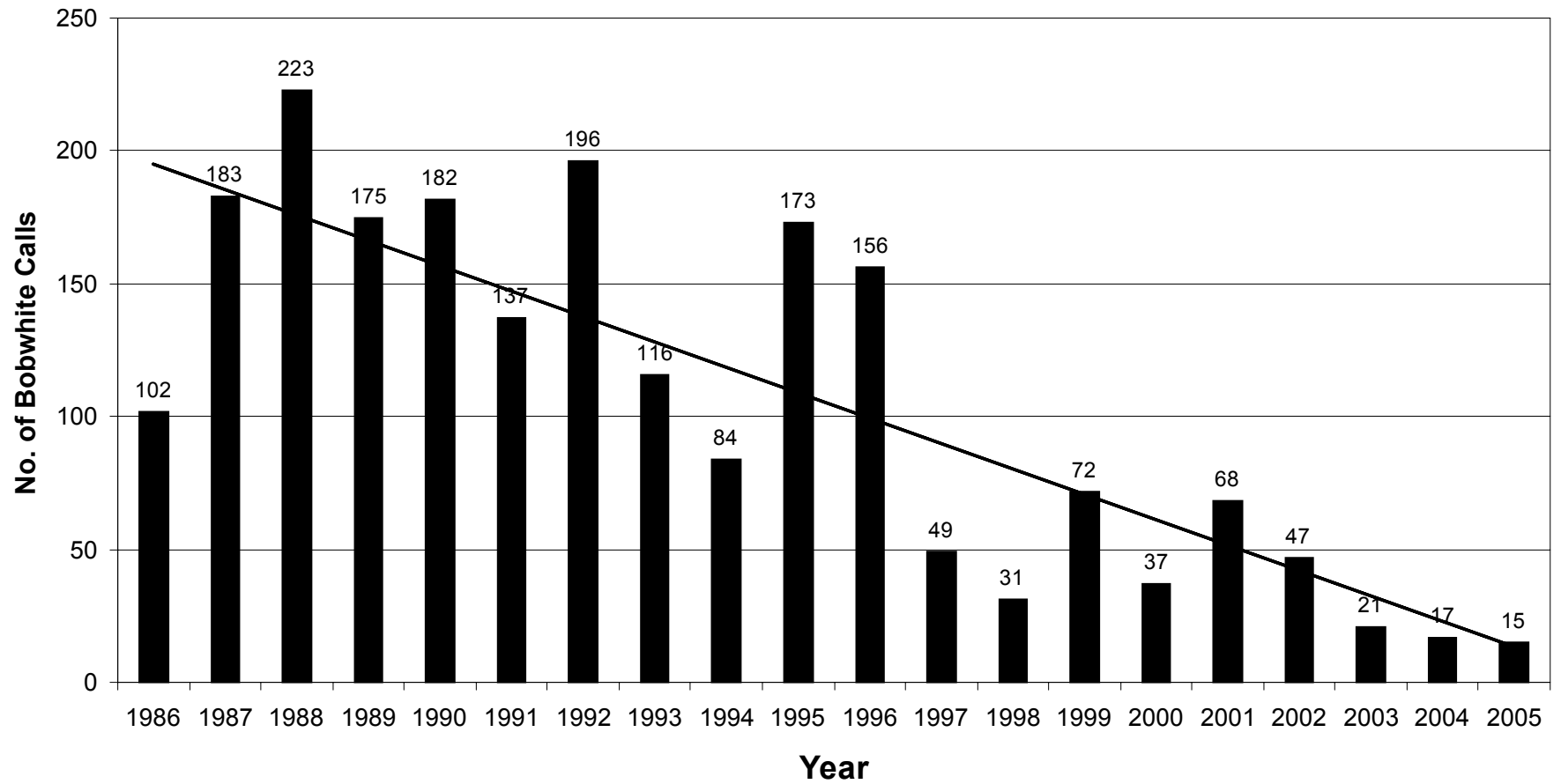


Figure 1

■ Peak Bobwhite Count — Trend

Appendix 1.

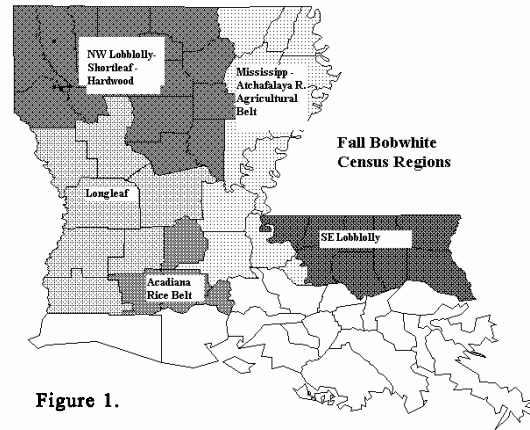
Fall Bobwhite Quail Whistling Survey Report - 2004

Introduction

A fall bobwhite quail whistling survey was initiated in Louisiana on Ft. Polk Wildlife Management Area (WMA) and portions of the adjoining Kisatchie National Forest in the fall of 1977. The results of this survey seemed to reflect the population trend and hunter success for that region. In 1983, the fall whistling survey was expanded, and the survey is now conducted statewide. This information is used to formulate indices to document the status of bobwhite quail in Louisiana.

Procedure

The fall bobwhite whistling survey is conducted across the state along 54 routes. The state is divided into 5 habitat types encompassing the historic bobwhite range: Longleaf, Northwest Loblolly-Shortleaf-Hardwood, Southeast Loblolly, Acadiana Rice Belt, and Mississippi/Atchafalaya Agricultural Belt (Figure 1). Six lines are assigned to both agrarian habitats and 36 routes are assigned to the forested habitat types on the basis of acreage. The Northwest Loblolly-Shortleaf-Hardwood Region has 16 routes, the Longleaf Region has 14 routes, and the Southeast Loblolly Region type has 6 routes. Two routes on the Vernon Unit of the Kisatchie National Forest and routes on Camp Beauregard, Ft. Polk, Peason Ridge, and Jackson-Bienville WMAs are also run.



If no bobwhites are recorded on a route for 3 consecutive years, zero is assumed for 5 years. After 5 years the route is run again, and if no quail are heard, it remains an assumed zero route for 5 more years. If quail are heard, the route is run again annually until 3 consecutive years pass without hearing a quail.

The starting points for all routes (except the WMA and special Kisatchie National Forest areas) were randomly selected. Routes were first plotted on parish road maps primarily along secondary roads. Ground truthings were then conducted and adjustments were made when necessary.

Whistling routes are approximately 30 km (19 miles) long with whistling stations located at approximately 1.6 km (1 mile) intervals. By whistling at the starting point as well as at the 1.6 km intervals, a total of 20 stops per route are made. The elapsed time between stations is approximately 3 minutes.

Responses are elicited via electronic calls. The sequence of the calls at each whistling station is 3-2-3-2-6-6 with a listening period of 10 seconds allocated after each mini-series of

calls. Observers record the number of coveys heard and rate the disturbance factor at each stop (none, low, moderate, high). Whistling counts begin ½ hour before sunrise and normally finish before 1½ hours after sunrise.

Results are expressed in terms of calls per stop. In some cases, routes may have less than 20 stops. If there was significant disturbance at a stop, the stop is not included in the analysis. A paired t-test was used to compare the current year indices with those of the prior year.

Results

Fall whistling surveys were conducted along 38 routes in 5 habitat types. There were 10 assumed zero routes. The Southeast Loblolly Region had the highest call per stop value, followed by the Northwest Loblolly-Shortleaf-Hardwood Region, the Longleaf Region, the Acadiana Rice Belt, and Mississippi/Atchafalaya River Agricultural Belt. Changes from 2003 were statistically significant ($P \leq 0.10$) for the Longleaf Region only. Data are summarized in Table 1 and Figures 2-6.

Table 1. Statewide fall bobwhite whistling survey results, 2004.

| Habitat Type | Calls Per Stop 2004 | Calls Per Stop 2003 | Change From 2003 | Long-Term Mean Calls per Stop 1983-2003 |
|---|------------------------|------------------------|---------------------|---|
| SE Loblolly | 0.08 | 0.12 | -33.4% (NS) | 0.22 |
| NW Loblolly- Shortleaf- Hardwood | 0.07 | 0.08 | -12.5% (NS) | 0.12 |
| Longleaf | 0.04 | 0.07 | -42.9% (S) | 0.15 |
| Acadiana Rice Belt | 0.03 | 0.01 | +300% (NS) | 0.10 |
| Miss./Atchaf. R. Agricultural Belt | 0 | 0.08 | NS decrease | 0.05 |

S = Significant ($P \leq 0.10$)

NS = Not Significant ($P \geq 0.10$)

The 2004 regional indices (calls per stop) remain below the long-term averages. The number of routes in which no quail were heard was the highest recorded since the inception of this survey. This year no quail were heard on 27 routes, including those assumed to be zero. The previous high number of routes on which no quail were heard was 24 routes in 2002. All routes except the Acadiana Rice Belt exhibited indices lower than the 2003 values. However, only the Longleaf Region recorded a statistically significant decrease. The Acadiana Rice Belt

exhibited a 300% increase from 2003, however this increase was not significant due to the limited sample and its variability.

In addition to the 4 random routes, fall bobwhite whistling surveys were conducted on 4 Wildlife Management Areas (WMA) and a portion of the Kisatchie National Forest. The highest indices were recorded from Peason Ridge WMA and Jackson-Bienville WMA (Table 2 and Figures 7 - 9).

Table 2. Results of fall bobwhite whistling surveys on selected Wildlife Management Areas (WMA) and the Vernon Unit, Calcasieu Ranger District, Kisatchie National Forest, 2004.

| Route | Calls per stop 2004 | Calls per stop 2003 | Long-term mean Calls per stop* |
|----------------------------------|--------------------------------|--------------------------------|---|
| Camp Beauregard WMA | 0 | 0 | 0.05 |
| Ft. Polk WMA | 0.15 | 0.10 | 0.20 |
| Jackson-Bienville WMA | 0.20 | 0.40 | 0.40 |
| Peason Ridge WMA | 0.30 | 0.40 | - |
| Vernon Unit #1 | 0.05 | 0.05 | 0.15 |
| Vernon Unit #2 | 0.05 | 0 | 0.12 |

*Baseline years vary by route and do not include current year: Camp Beauregard WMA 1986-2003; Ft. Polk WMA 1983-2003; Jackson-Bienville WMA 1990-2003; Vernon Units #1 and #2 1991-2003.

Discussion

In most years, the majority of the hatches in Louisiana occur from mid-July through August. Fall populations seem to be highest when a large proportion of the hatches occur after the first week of August. Weather conditions during this period and the preceding few weeks can greatly influence productivity. Quail production is usually best in years when summer rainfall is above normal and temperatures are below normal. High temperatures and drought are thought to negatively impact insect production, which in turn can affect hen condition and chick survival. Hot and dry conditions may also reduce cover and make nests and broods more susceptible to predation.

Weather conditions during the summer of 2004 were generally favorable for quail production in the northern one-half of Louisiana. Temperatures during May were normal or above normal across the state. June through August temperatures were normal or below normal. May and June precipitation was well above normal, and July rainfall was below normal over most of the state. August rainfall was variable with the northern and central regions wetter than the southern regions. The abundant rainfall during May and June should have resulted in adequate cover for July and August nests. Weather conditions are summarized in Table 3.

Weather conditions during the survey period may have negatively influenced the indices in 2004. Over 80% of the routes were run during the first 2 weeks of the survey period. Temperatures during these 2 weeks were extremely warm with the statewide averages 13°F above normal. Cool temperatures are thought to be more conducive to calling activity than warm temperatures.

Adverse weather and habitat deterioration have reduced bobwhite quail abundance over the last 20 years. Year to year fluctuations are due largely to weather conditions. However,

deteriorating habitat conditions are thought to be responsible for the long-term decline. During 1983-92, the number of routes on which no quail were heard ranged from 4 – 14 per year, and averaged 8.0 routes per year. Since 1993, the number of routes on which quail were not heard ranged from 8-27 per year, and averaged 15.3 routes per year. Comparison of the 2004 indices with the long-term (1983-2003) means in Table 1 further illustrates the decline in bobwhite quail.

Table 3. Summary of Louisiana precipitation and temperature expressed as a percentage of normal, May - August, 2004.

| Region | May | | June | | July | | August | |
|---|--------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|--------------------|-----------------------|
| | Temp. ^a | Rainfall ^a | Temp. ^a | Rainfall ^a | Temp. ^a | Rainfall ^a | Temp. ^a | Rainfall ^a |
| SE Loblolly | 100 | 217 | 100 | 246 | 100 | 47 | 98 | 91 |
| NW Loblolly- Shortleaf- Hardwood | 101 - 103 | 35 - 156 | 99 - 100 | 243 - 265 | 96 - 98 | 40 - 134 | 95 - 98 | 103 - 117 |
| Longleaf | 100 | 171 – 239 | 99 | 210 – 397 | 99 | 59 – 85 | 96 – 99 | 52 - 151 |
| Acadiana Rice Belt | 100 | 173 – 183 | 99 | 177 – 210 | 99 | 59 – 80 | 99 | 38 - 52 |
| Miss./Atchaf. R. Agricultural Belt | 100 – 101 | 150 – 239 | 98 – 99 | 266 – 397 | 98 – 99 | 80 – 177 | 95 – 96 | 52 - 157 |

^a Data from the Louisiana Office of State Climatology. Range is provided when survey regions contain more than one climate region.

The longleaf region of western and central Louisiana was historically one of the best areas of bobwhite habitat. However, in recent years the index from that region has declined considerably. The 2004 index is the lowest recorded for this region. During the same time, habitat quality has deteriorated as more land is subject to intensive pine management practices. The decreased use of prescribed burning as a forest management tool is probably the most important change in this area in the past several years. As a result, even when weather is favorable for bobwhite production, negative habitat influences may keep production (and resulting populations) at a low level.

Fall Bobwhite Survey Northwest Loblolly/ Shortleaf Hardwood

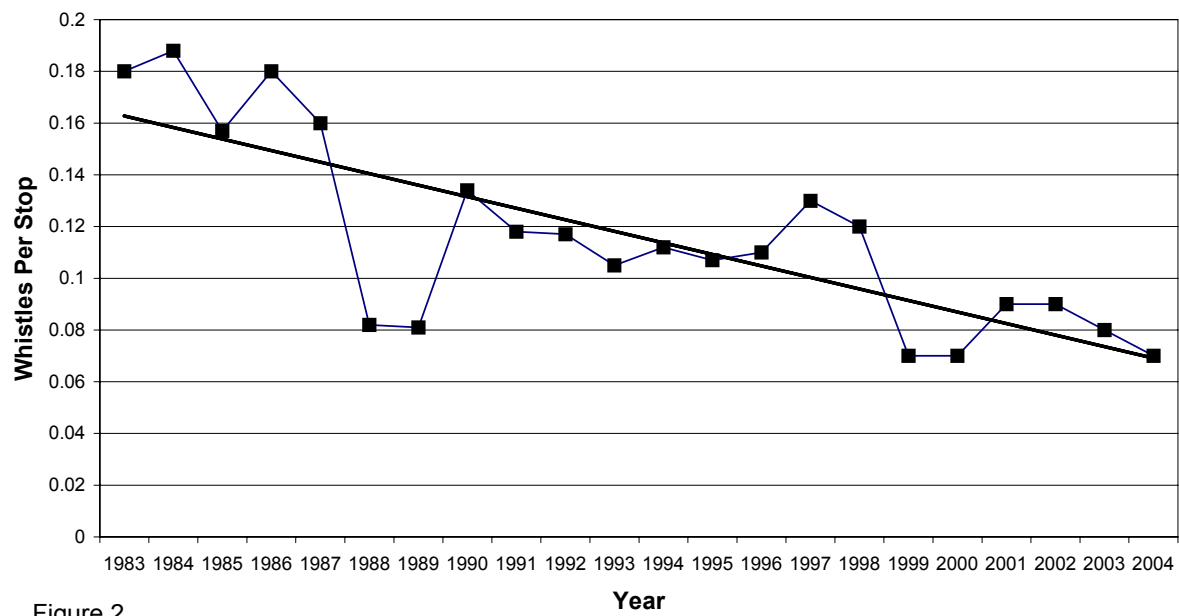


Figure 2.

■ Whistles — Trend

Fall Bobwhite Survey Southeast Loblolly

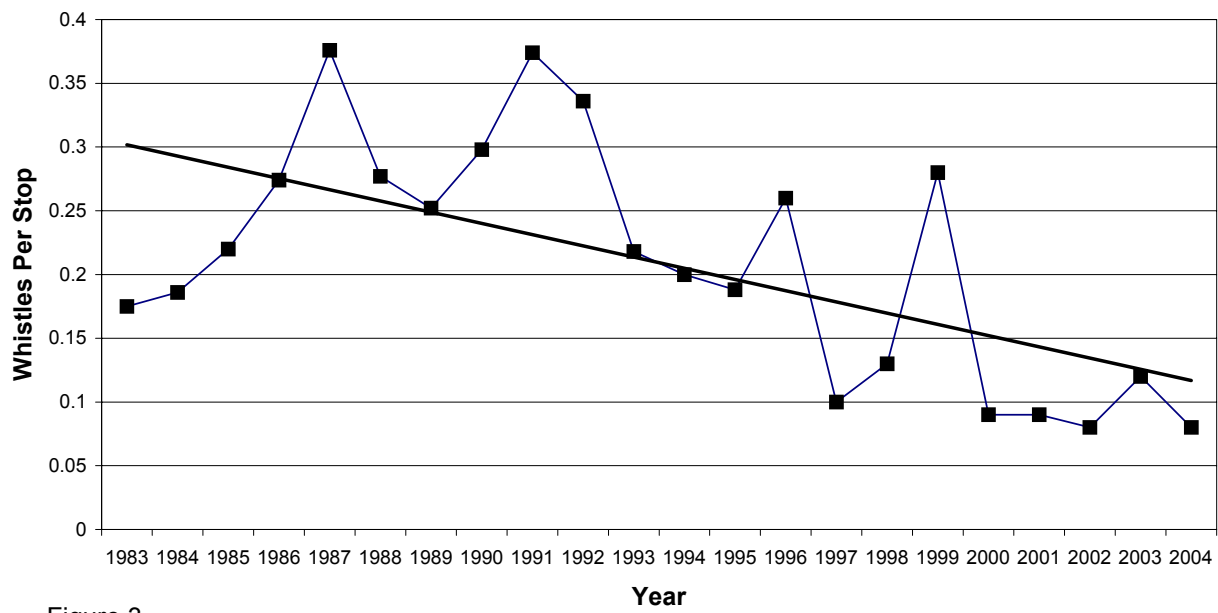


Figure 3.

■ Whistles — Trend

Fall Bobwhite Survey Longleaf Pine

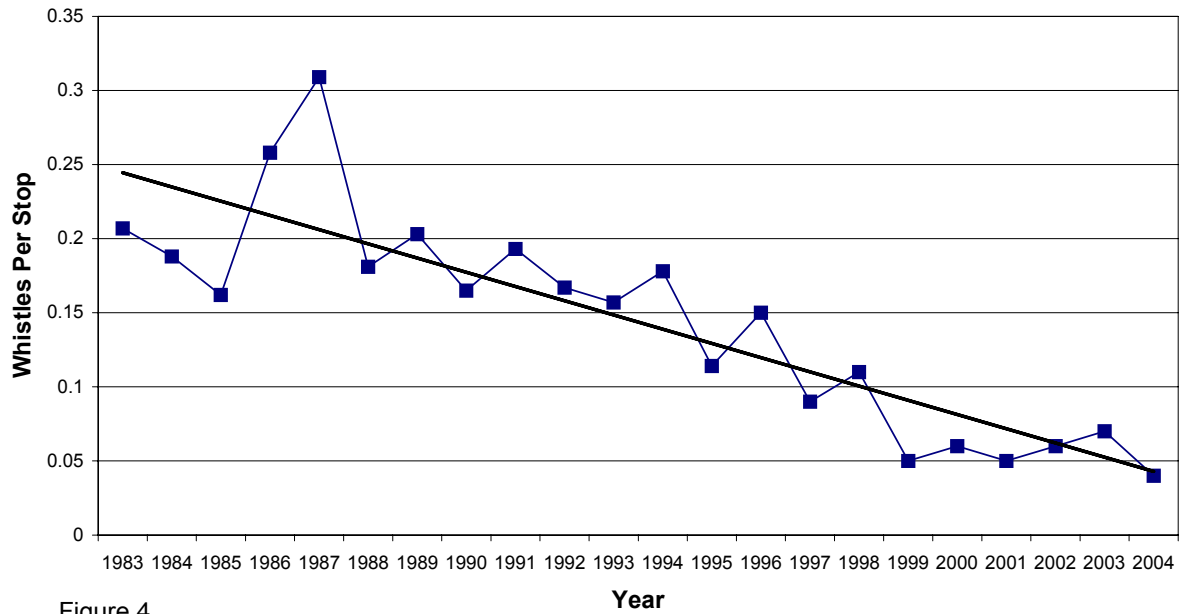


Figure 4.

■ Whistles — Trend

Fall Bobwhite Survey Acadiana Rice Belt

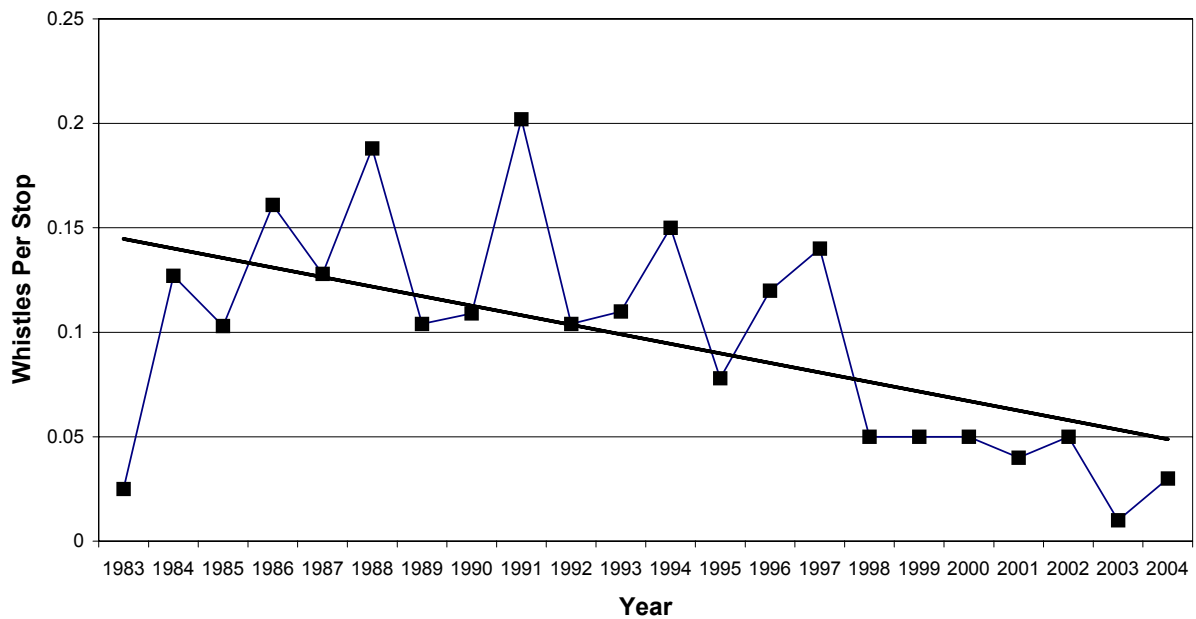


Figure 5.

■ Whistles — Trend

Fall Bobwhite Census Mississippi / Atchafalaya Agriculture Belt

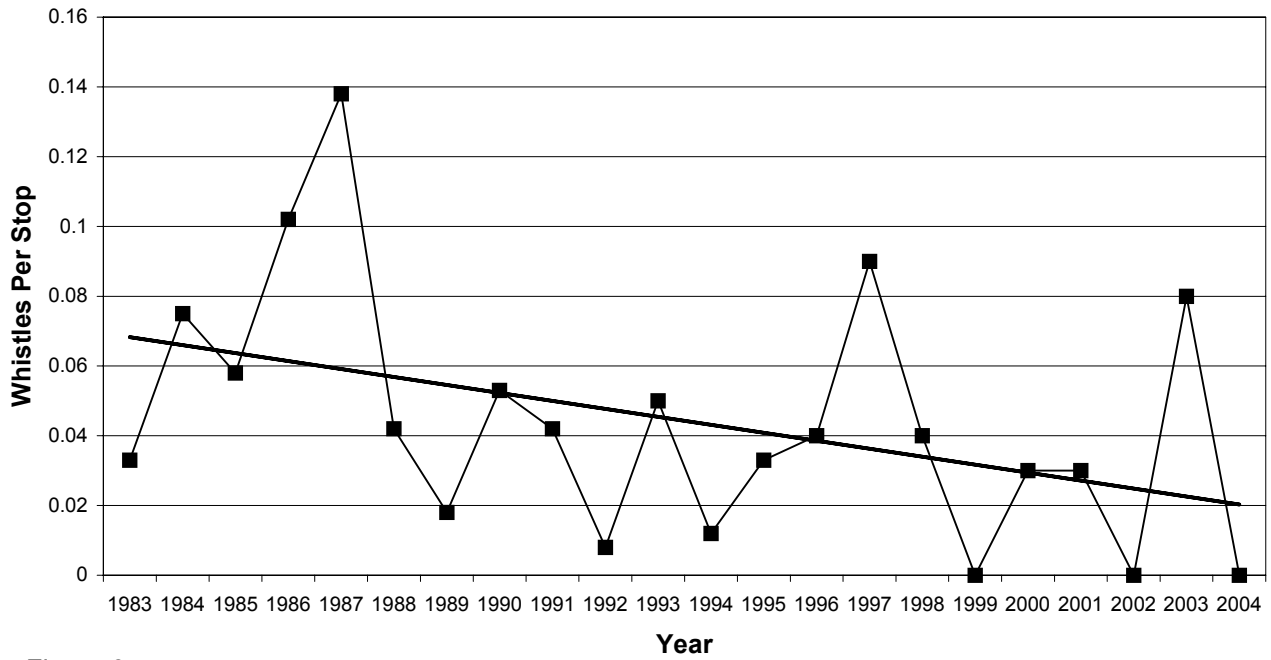


Figure 6.

■ Whistles — Trend

Fall Bobwhite Census Selected WMAs

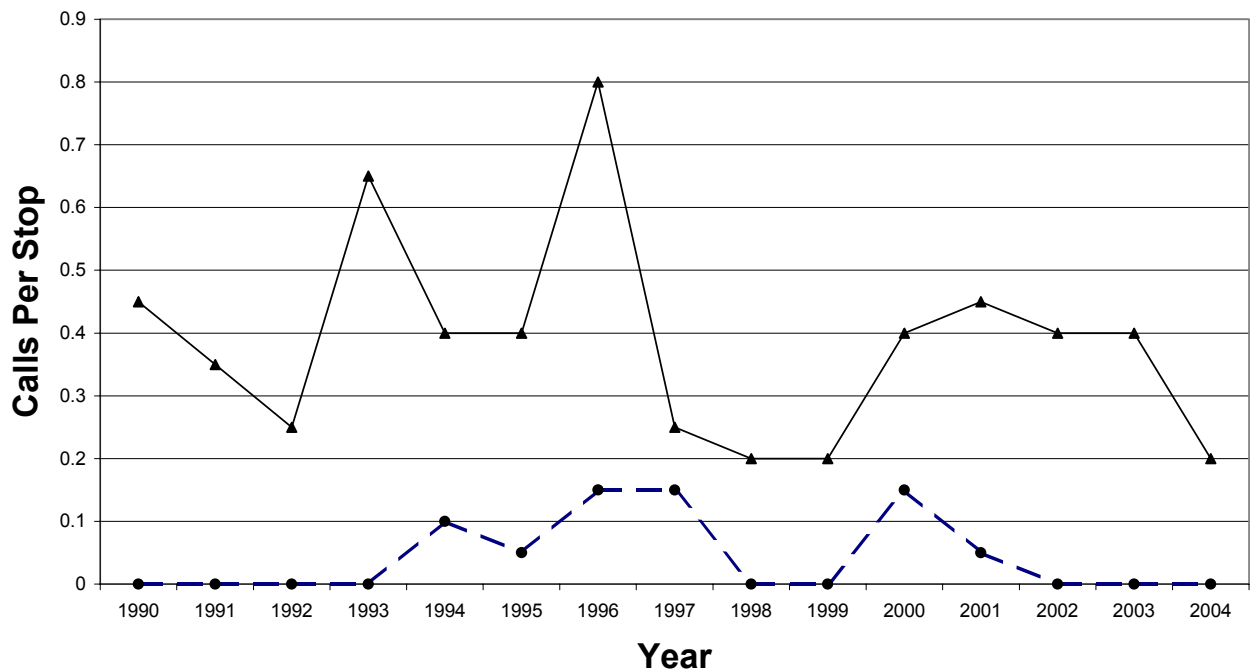


Figure 7.

● Camp Beauregard ▲ Jackson-Bienville

Fall Bobwhite Census

Vernon District, KNF

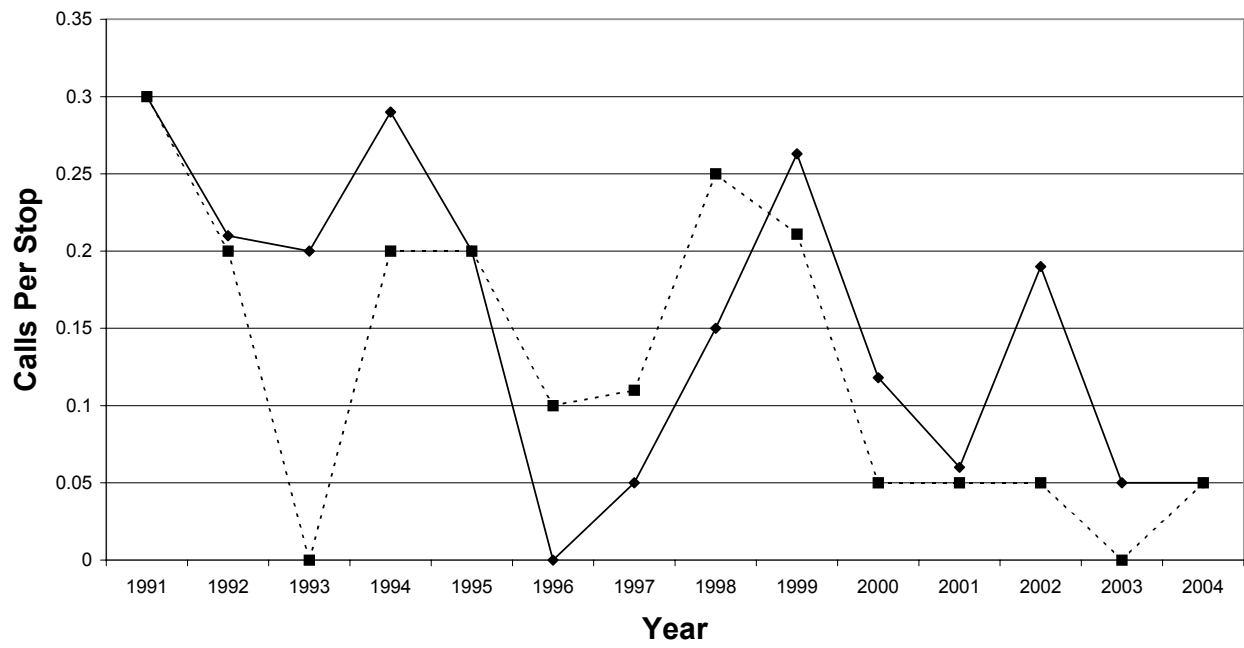


Figure 8.

—◆— Vernon #1 - - ■ - - Vernon #2